U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
CINCINNATI, OHIO 45202

HEALTH HAZARD EVALUATION DETERMINATION
REPORT NO. 73-73-143

INLAND MANUFACTURING COMPANY
GENERAL MOTORS CORPORATION
DAYTON, OHIO
OCTOBER 1974

I. TOXICITY DETERMINATION

It has been determined that exposure to dusts containing small amounts of silica (combustion products of coal) is not toxic at the concentrations measured during the clean-up operations in Building 1-A, Plant 1, Department 14, Boiler Room. This determination is based upon environmental measurements in the workplace and employee interviews. During the environmental evaluation (February 14, 1974)no significant symptoms were reported by interviewed employees and dust levels were well below those believed to be toxic.

II. DISTRIBUTION AND AVAILABILITY OF DETERMINATION REPORT

Copies of this determination report are available upon request from the Hazard Evaluation Services Branch (NIOSH), U.S. Post Office Building, Room 508, 5th and Walnut Streets, Cincinnati, Ohio 45202. Copies have been sent to:

(a) Inland Manufacturing Division of General Motors Corporation, Dayton, Ohio.
(b) Authorized Representative of Employees
(c) U.S. Department of Labor - Region V
(d) NIOSH - Region V

For the purpose of informing the approximately 10 "affected employees" the employer will promptly "post" the Determination Report in a prominent place(s) near where exposed employees work for a period of 30 calendar days.

III. INTRODUCTION

Section 20(a)(6) of the Occupational Safety and Health Act of 1970, 29 U.S.C. 669 (a)(6), authorizes the Secretary of Health, Education, and Welfare, following a written request by any employer or authorized representative of employees, to determine whether any substances normally found in the place of employment has potentially toxic effects in such concentrations as used or found.

The National Institute for Occupational Safety and Health received a request from an authorized representative of employees regarding

exposures to coal dust and fly ash during the clean-up operation of the boilers, located in Building 1-A, Plant 1, Department 14, at the Inland Manufacturing Division of General Motors Corporation, Dayton, Ohio.

HEALTH HAZARD EVALUATION

A. Description of Process

Coal is the fuel used in one or a combination of three boilers which supply heat and power to Inland Manufacturing Company in Dayton, Ohio. The operation of blowing the boiler tubes in the boilers lasts approximately 45 minutes in an-eight-hour shift. One boiler is cleaned every shift This requires two operators. The operation consists of 1) blowing the ashes inside the boiler with an air lance to the opposite side of the boiler, 2) shoveling ashes from the interior of the boiler onto a high velocity transport exhaust system located below the floor level, 3) blowing ashes from the combustible chamber inside the boiler, and 4) mechanically removing the ashes from the boiler heat transfer surfaces (heat exchangers).

B. Evaluation Design/Methods

An initial observation survey of the Boiler House Building 1-A, Plant 1, Department 14 was made on October 14, 1973 to assess the alleged hazard. The alleged health hazard in the Boiler House was coal dust and fly ash exposure during the boiler clean-up operation. During the initial visit the boiler clean-up operation had been performed earlier in the shift. Therefore the environmental evaluation on this occasion was rather limited.

On February 14, 1974 follow-up survey was made. Environmental samples were obtained during the clean-up operation. A total of five filter samples were collected in the area, two personal for total dust and respirable fraction and three general area samples for total dust and SiO_2. The air samples were analyzed by NIOSH's Cincinnati laboratories.[2]

C. Evaluation Criteria

The occupational health standards promulgated by the U.S. Department of Labor (Federal Register, October 1972, Title 29, Chapter XVII, Subpart G, Table G-3).

Substances	8-Hour-Time-Weighted Average mg/M^3*
Total Dust (nuisance)	15 mg/M^3
Respirable Dust (nuisance)	5 mg/M^3
Quartz (Respirable Fraction)	10 mg/M^3 / % Resp SiO_2 + 2
Quartz (Total Dust)	30 mg/M^3 / % SiO_2 + 2
Coal Dust (respirable Fraction less than 5% SiO_2)	2.4 mg/M^3

*Milligrams of particulate per cubic meter of air. Occupational Health standards for individual substances are established at levels designed to protect workers occupationally exposed on an 8-hour per day, 40 hours per week basis over a normal working life time.

D. Evaluation Results and Discussions

Environmental

Five samples were collected for total dust and respirable fraction during the clean-up operation. The airborne dust concentrations were very low. Hence, a silica (SiO_2) determination was not made. However, a SiO_2 determination was made on a bulk sample and 2.2% free silica was found. A dust standard of 2.4 mg/M^3 was determined using the percent (2.2%) of free silica found in the bulk sample. Since all total dust levels were less than 0.78 mg/M^3 it has been determined that the SiO_2 level is insignificant.

The dust concentration levels obtained on the filters were well below the established Federal Standards of 15 mg/M^3 for total dust (nuisance).

Medical

Five of the ten employees were interviewed during the first and second shift in regard to health problems which might be associated with their work environment. An analysis of the medical questionnaire responses indicated that one employee complained of increased sinus problems attributed to dust during the clean-up operation. No other problems were attributed to the work environment.

V. AUTHORSHIP AND ACKNOWLEDGMENTS

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